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JUL 30 1986

Stephen W. Holt
Environmental Control Department
NL Industries, Inc.
P.O. Box 1090
Hightstown, New Jersey 08520

Dear Mr. Holt:

With this letter, U.S. EPA grants approval for the May 1986 submittal of the RI/FS Workplan ("Work Plan") /Safety Plan/ Quality Assurance Project Plan ("QAPP")/ Sampling Plan for the NL Industries - Granite City, Illinois site, as amended by the June 19, 1986 letter submitted to U.S. EPA by Frank Hale, O'Brien & Gere (Attachment I) and the enclosed pages (Attachment II) to be inserted in the QAPP to supercede the corresponding material in the May 1986 submittal. Approval of the Work Plan is also subject to the conditions set forth in the following paragraph. NL Industries has hereby satisfied Paragraph 14, subparagraph (a) of the Consent Order, and the Work Plan, as amended, is now an integral and enforceable element of the Consent Order, subject to the provisions for dispute resolution set forth in the Order.

U.S. EPA noted several deficiencies of the Work Plan when compared to the requirements of the Consent Order; specifically, (1) the air investigation, (2) the investigation to determine the vertical extent of soil contamination, and (3) the lack of an investigation to characterize waste piles on commercial and industrial properties adjacent to the Taracorp property and on other areas, such as lots and roadways. U.S. EPA is concerned with these deficiencies; however, in order to expedite the project, U.S. EPA is approving the Work Plan, as amended. Please be advised that if, during the remedial investigation, it is determined that additional investigation is needed relative to items (1)-(3) above to meet the intent of the Consent Order, U.S. EPA will require NL Industries to perform additional activities as deemed appropriate.

NL Industries is reminded that Paragraph 14, subparagraph (b)(1) of the Consent Order, granting NL Industries 170 days to complete the work associated with Tasks 1,2,3,4, and 5 and submit the draft Remedial Investigation Report identified as Task 6, as set forth on page 11 of Exhibit "A" of the Order, will become effective when access to all necessary off-site sampling locations has been gained through the combined efforts of NL Industries and U.S. EPA. A follow-up letter will be sent to NL Industries specifying the exact starting date for the schedule in paragraph 14, subparagraph (b) (1) of the Order.

If you have any questions or comments regarding this letter, please contact me at (312) 886-4742.

Sincerely yours,

Brad Bradley, Remedial Project Manager
Region V CERCLA Enforcement Section

Attachments

cc: Ken Miller, Project Manager
Remedial Project Management Section
Division of Land Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

bcc: R. Diefenbach
N. Niederyang
R. Grimes

5HE-12:CERCLA:BBradley:klh:6/17/86 (1)
mt:Second draft:7/16/86
klh: final 7/23/86

Attachment I

O'BRIEN & GERE

June 24, 1986

Director, Waste Management Division
USEPA, Region V
Attn: Mr. Brad Bradley (5HE-12)
230 S. Dearborn Street
Chicago, IL 60604

Director, ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY
Attn: Mr. Ken M. Miller
2200 Churchill Road
Springfield, IL 62706

Re: NL Granite City Site

File: 2844.012

Gentlemen:

Pursuant to recent communication between NL Industries, Inc. (NL), U.S. Environmental Protection Agency (USEPA), and Illinois Environmental Protection Agency (IEPA), minor revisions to the subject Remedial Investigation Work Plan (RIWP) and Quality Assurance Project Plan (QAPP) have resulted. Specifically, these modifications are as follows:

1. RIWP, p.16, Section 3.04 - delete last sentence;
2. RIWP, Table 2 - modifications to analytical program;
3. RIWP, Figure 6 - delete;
4. QAPP (Appendix C), Cover Page - include IEPA signatures; and
5. Sampling Plan (Appendix D), Table D-2- modifications.

Enclosed are copies of items 1, 2, 4 and 5 above incorporating the revisions stated. Please replace the pages in the May, 1986 submittal with the appropriate pages enclosed, and remove Figure 6 of the RIWP.

Upon your approval of the QAPP, please obtain the required signatures on the enclosed Cover Page of the QAPP, and forward one copy of the signed Cover Page to Mr. Stephen W. Holt of NL Industries, Inc.

If you have any questions regarding this matter, please contact us.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Frank D. Hale
Research Manager

FDH:jld:D15:08

cc: Mr. S.W. Holt - NL
Mr. D.M. Crawford-OBG

The personnel that would be involved with assessing each remedial approach were selected on the basis of their experience appropriate to that specific method. Dr. Kaczmar and his risk assessment team will provide the environmental assessment support for the remedial approaches identified.

3.04 Project Schedule

The required schedule for implementing the work detailed in Section 2 is noted in Section F of the Agreement and Administrative Order by Consent which became effective on May 14, 1985.

TABLE 2

REMEDIAL INVESTIGATION

ANALYTICAL PROGRAM

JUNE 1986 REVISION

	Sample Site	#	Field Sieve[1]	Lab Sieve[2]	Digest	Ext.	Filt.	pH	Cond.	Pb	Cd	Cr	Ba	As	Hg	Se	Ag	Sb	Cu	Fe	Mn	Ni	Zn	SO_4	TDS
3a																									
	Slag	4	--	4	4	2	--	--	--	4	4	4	4	4	4	4	4	4	4	4	4	4	4	--	--
	Upper Strata	10	10	--	10	5	--	--	--	10	10	10	10	10	10	10	10	10	10	10	10	10	10	--	--
	SLLR Pile	2	2	--	2	1	--	--	--	2	2	2	2	2	2	2	2	2	2	2	2	2	2	--	--
	Drummed Material	2	--	--	*	1	--	*	*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	--	--
3b																									
	Wells Quarter - 1	15	--	--	3	--	12	15	15	15	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Wells Quarter - 2	15	--	--	3	--	12	15	15	15	12	12	12	12	12	12	12	**	**	**	**	**	**	**	**
3c																									
	Soils Grid	72	--	72	72	--	--	--	--	72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Off-Site Removal Areas	11	--	11	11	--	--	--	--	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3d																									
	Deposition	4	--	--	4	--	--	--	--	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Runoff	4	--	--	4	--	--	4	4	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

1 Field sieving indicates that samples will be sieved in the field through a 9.5 mm standard sieve. That portion passing through the sieve will be collected and submitted for analysis.

2 Lab sieving indicates that soil samples will be sieved through a 16 mesh stainless steel sieve after drying (8 hours at 100°C, or until dry), prior to analysis. Slag samples will be crushed and sieved through a 9.5 mm standard sieve in the laboratory prior to analysis.

* If the drummed materials are solid wastes, they will undergo digestion. If they are liquid wastes, they will be tested for pH and conductivity in the field.

** Second quarter groundwater samples will be analyzed for those parameters observed in significant concentrations in the first quarter groundwater analysis, as jointly agreed upon by USEPA, IEPA, and NL Industries.

The analytical program is to include one EPA Toxicity (Metals only) for Off-Site soils with highest Pb if over 1000 ppm.

In the event that activities in Task 1 determine that environmentally significant parameters are present, these parameters will be included in 3a and/or 3b1 above, for utilization where parameter involvement is suspected.

The preceding narrative is modified by reference to be consistent with this table. In the event of a discrepancy between this table and the RIWP, this table will be governing.

TABLE D-2

REMEDIAL INVESTIGATION

ANALYTICAL PROGRAM

JUNE 1986 REVISION

	Sample Site	#	Field Sieve[1]	Lab Sieve[2]	Digest	Ext.	Filt.	pH	Cond.	Pb	Cd	Cr	Ba	As	Hg	Se	Ag	Sb	Cu	Fe	Mn	Ni	Zn	SO_4	TDS
3a																									
	Slag	4	--	4	4	2	--	--	--	4	4	4	4	4	4	4	4	4	4	4	4	4	4	--	--
	Upper Strata	10	10	--	10	5	--	--	--	10	10	10	10	10	10	10	10	10	10	10	10	10	10	--	--
	SLLR Pile	2	2	--	2	1	--	--	--	2	2	2	2	2	2	2	2	2	2	2	2	2	2	--	--
	Drummed Material	2	--	--	*	1	--	*	*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	--	--
3b																									
	Wells Quarter - 1	15	--	--	3	--	12	15	15	15	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Wells Quarter - 2	15	--	--	3	--	12	15	15	15	12	12	12	12	12	12	12	**	**	**	**	**	**	**	**
3c																									
	Soils Grid	72	--	72	72	--	--	--	--	72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Off-Site Removal Areas	11	--	11	11	--	--	--	--	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3d																									
	Deposition	4	--	--	4	--	--	--	--	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Runoff	4	--	--	4	--	--	4	4	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

1 Field sieving indicates that samples will be sieved in the field through a 9.5 mm standard sieve. That portion passing through the sieve will be collected and submitted for analysis.

2 Lab sieving indicates that soil samples will be sieved through a 16 mesh stainless steel sieve after drying (8 hours at 100°C, or until dry), prior to analysis. Slag samples will be crushed and sieved through a 9.5 mm standard sieve in the laboratory prior to analysis.

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The analytical program is to include one EPA Toxicity (Metals only) for Off-Site soils with highest Pb if over 1000 ppm.

In the event that activities in Task 1 determine that environmentally significant parameters are present, these parameters will be included in 3a and/or 3b1 above, for utilization where parameter involvement is suspected.

The preceding narrative is modified by reference to be consistent with this table. In the event of a discrepancy between this table and the RIWP, this table will be governing.

APPENDIX C

QUALITY ASSURANCE PROJECT PLAN (QAPP)

GRANITE CITY SITE

GRANITE CITY, ILLINOIS

APPROVALS:

USEPA REGION V
REMEDIAL PROJECT MANAGER
Brad W Bradley
Date: 7/30/86

USEPA REGION V
QUALITY ASSURANCE OFFICER
James D. Adams Jr.
Date: 7/22/86

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY
REMEDIAL PROJECT MANAGER
Kenneth M. Miller
Date: 7-14-86

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY
QUALITY ASSURANCE OFFICER
Bina Shah Flecle
Date: 7.14.86

O'BRIEN & GERE ENGINEERS, INC.
PROJECT OFFICER
C B Murphy Jr
Date: 6/26/86

OBG LABORATORIES, INC.
QUALITY ASSURANCE OFFICER
David C. Fell
Date: 6/26/86

PREPARED BY:

O'BRIEN & GERE ENGINEERS, INC.
1304 BUCKLEY ROAD
SYRACUSE, NEW YORK 13221

Attachment II
Amended QAPP Pages

TABLE C-1

QA/QC OBJECTIVES FOR FILTERED AQUEOUS SAMPLES AND UNFILTERED GROUNDWATER FOR LEAD

Parameter	Method[1]		Detection Limit (ppb)	Average Accuracy	Precision	Completeness
Antimony	204.2	Furnace *	20	85-115%	20%	100%
Arsenic	206.2	Furnace	5	85-115%	20%	100%
Cadmium	213.2	Furnace *	1	85-115%	10%	100%
Chromium	218.2	Furnace *	5	85-115%	10%	100%
Copper	220.2	Furnace *	10	85-115%	10%	100%
Iron	236.1	Flame	100	85-115%	10%	100%
Lead**	239.2	Furnace *	5	85-115%	10%	100%
Mercury	245.1	Cold Vapor	.2	85-115%	20%	100%
Manganese	243.1	Flame	25	85-115%	10%	100%
Nickel	249.2	Furnace *	10	85-115%	10%	100%
Selenium	270.2	Furnace	2	85-115%	20%	100%
Silver	272.2	Furnace *	5	85-115%	10%	100%
Zinc	289.1	Flame	20	85-115%	10%	100%
Barium	208.1	Flame	1,000	85-115%	10%	100%
Sulfate	375.3	Gravimetric	10,000	85-115%	20%	100%
TDS	160.1	Gravimetric	10,000	85-115%	20%	100%

Quality Control Measures

- Analyze one Field Blank - no positives.
- Analyze one Method Blank - no positives.
- Analyze one matrix spike for every 10 samples- acceptable recoveries 75-125%.
- Analyze one duplicate for every 20 samples.

- Furnace methods
  - Lanthanum nitrate added for sulfate suppression in analysis of lead.
  - All solutions will be quantified by method standard additions as appropriate, consistent with Metals pages 1, 8, 9, and 12 of Reference 1.

- Flame methods
  - Potassium chloride added for barium analysis - nitrous oxide flame.

* Either appropriate flame or furnace methods are acceptable; however, if flame methods are utilized and concentrations are less than 3-5 times the corresponding flame detection limits, the results will be verified by utilization of furnace methods.

** All unfiltered groundwater will be digested using Method 3020. Any spikes will be matrix spikes prior to digestion. All final solutions will be quantified by method of standard additions as appropriate consitent with Metals pages 1, 8, 9, and 12 of Reference 1.

[1] USEPA, "Methods for Chemical Analyses of Water and Wastes," March, 1979.

TABLE C-2

QA/QC OBJECTIVES FOR SOIL, SEDIMENT, SOLID AND UNFILTERED AQUEOUS SAMPLES

Parameter	Method[1]		Digestion[2]	Detection Limit in final Digestat (ug/l)	Average Accuracy	Precision	Completeness
Antimony	204.2	Furnace	3050	20	75-125%	25%	90%
Arsenic	206.2	Furnace	3050	5	75-125%	25%	90%
Barium	208.1	Flame	3050	200	75-125%	25%	90%
Cadmium	213.1	Flame	3050	20	75-125%	25%	90%
Chromium	218.1	Flame	3050	50	75-125%	25%	90%
Copper	220.1	Flame	3050	50	75-125%	25%	90%
n	236.1	Flame	3050	50	75-125%	25%	90%
Lead	239.1	Flame	3050*	200	75-125%	25%	90%
Manganese	243.1	Flame	3050	25	75-125%	25%	90%
Mercury	245.1	Cold Vapor	7471	.2	75-125%	25%	90%
Nickel	249.1	Flame	3050	100	75-125%	25%	90%
Selenium	270.2	Furnace	3050	20	75-125%	25%	90%
Silver	272.1	Flame	3050	50	75-125%	25%	90%
Zinc	289.1	Flame	3050	50	75-125%	25%	90%

lity Control Measures

solid

- Analyze two reference materials from EMSL - Cincinnati and/or National Bureau of Stds.
- Spike standard solution into distilled water and proceed through Digestion Method 3050.
- Spike two digestates with all metals of interest and analyze for recoveries - acceptable recoveries 65-135%.
- Analyze one Field blank - no positives.
- Analyze one Method blank - no positives.
- If recoveries are outside acceptable limit, method of standard additions will be used for furnace methods.

[1] USEPA, "Methods for Chemical Analyses of Water and Wastes," March, 1979.

[2] USEPA, "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods," SW-846, 1984.

* Digested by Method 3010 for surface run-off lead analyses.

TABLE C-2

QA/QC OBJECTIVES FOR SOIL, SEDIMENT, SOLID AND UNFILTERED AQUEOUS SAMPLES (Continued)

- Digestion
  - Samples will be subjected to Method 3050 for digestion.
  - Hydrochloric acid final reflux for analysis of Sb, Ag, Cd, Cr, Cu, Pb, Ni, Zn.
  - Nitric acid final reflux for analysis of As, Se, Fe, Mn, Ba.
- Analysis
  - Barium - Potassium chloride addition - nitrous oxide flame.
  - Chromium - nitrous oxide flame.
  - If silver results are greater than 1 ppm will require analysis of nitric acid reflux solution.
  - Lead in soil analysis will spike at 10 - 30 mg/l (in final digest) as a matrix spike prior to sample digestion.